

1 What is claimed is:

2 1. An optical device with a tape carrier package comprising:

3 an optical sensor chip forming a plurality of electrodes on its sensible surface;

4 a flexible circuit board having an upside surface, an underside surface and a window,  
5 wherein the underside surface around the window is adhered to the perimeter of the  
6 sensible surface of the optical sensor chip;

7 a plurality of metal circuits formed on the flexible circuit board and having inner leads  
8 extending to the window for bonding with the corresponding electrodes of the optical  
9 sensor chip and outer leads; and

10 a base having a recession to accommodate the optical sensor chip being located under  
11 the underside surface of the flexible circuit board and being corresponding to the  
12 window.

13 2. The optical device with a tape carrier package of claim 1, wherein the base has a  
14 surrounding dam which extends onto the upside surface of the flexible circuit board.

15 3. The optical device with a tape carrier package of claim 2, further comprising a  
16 transparent cover fixedly attached to the surrounding dam of the base.

17 4. The optical device with a tape carrier package of claim 1, wherein the flexible circuit  
18 board further forms a plurality of openings around the window.

19 5. The optical device with a tape carrier package of claim 1, wherein the outer leads of  
20 the metal circuits extends in a same direction.

21 6. An optical device with a tape package comprising:

22 an optical sensor chip forming a plurality of electrodes on its sensible surface;

23 a flexible circuit board having an upside surface, an underside surface and a window,  
24 wherein the underside surface around the window is adhered to the perimeter of the  
25 sensible surface of the optical sensor chip;

26 a plurality of metal circuits formed on the flexible circuit board and having inner leads  
27 extending to the window for bonding with the corresponding electrodes of the

- 1        optical sensor chip and outer leads; and
- 2        a thermosetting filler at least formed at the connection perimeter of the optical sensor
- 3        chip and the underside surface of the flexible circuit board.
- 4        7. The optical device with a tape carrier package of claim 6, further comprising a
- 5        transparent cover on the upside surface of the flexible circuit board.
- 6        8. The optical device with a tape carrier package of claim 6, further comprising a
- 7        transparent gel filling on the sensible surface of the optical sensor chip.
- 8        9. The optical device with a tape carrier package of claim 6, wherein the flexible circuit
- 9        board further forms a plurality of openings around the window.
- 10       10. The optical device with a tape carrier package of claim 9, wherein the thermosetting
- 11       filler is partially formed on the upside surface of the flexible circuit board through the
- 12       openings.
- 13       11. The optical device with a tape carrier package of claim 6, wherein the outer leads of
- 14       the metal circuits extends in a same direction.
- 15       12. The optical device with a tape carrier package of claim 6, wherein the thermosetting
- 16       filler is a base for carrying the optical sensor chip.
- 17       13. A tape carrier packaging method for the optical device comprising:
- 18       providing a tape having an upside surface, an underside surface and a plurality of
- 19       windows, wherein a plurality of metal circuits are formed on the upside surface and
- 20       have the inner leads extending to the windows;
- 21       providing at least an optical sensor chip having a plurality of electrodes being formed
- 22       on the sensible surface of each optical sensor chip;
- 23       thermal compressing the inner leads of the metal circuits in the window for bonding
- 24       with the electrodes of the optical sensor chip; and
- 25       forming a thermosetting filler to seal the connection perimeter of the optical sensor
- 26       chip and the flexible circuit board.
- 27       14. The tape carrier packaging method for the optical device of claim 13, wherein in the

1 step of forming a thermosetting filler, by molding and injection the formed base has a  
 2 recession accommodating the optical sensor chip, located under the underside surface  
 3 of the flexible circuit board and being corresponding to the window, and a surrounding  
 4 dam which extends onto the upside surface of the tape.

5 15. The tape carrier packaging method for the optical device of claim 14, further  
 6 comprising a step:

7 fixedly attaching a transparent cover to the surrounding dam of the base.

8 16. The tape carrier packaging method for the optical device of claim 13, wherein a  
 9 plurality of openings are formed around each window.

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